Testimony, Wind Energy Siting Reform Act

The proposed Wind Energy Siting Reform Act would pave the way towards opening up 44 locations on state lands for industrial wind power development. State lands comprise two thirds of the potential land based wind power locations in the state. This would amount to 75 miles of ridgeline wind turbines, mostly located in the middle of the largest tracts of undeveloped land in the Commonwealth. These lands include state forests, wildlife management areas, parks, etc.. Small communities, many of which have already adopted bylaws addressing industrial scale wind power, would lose a significant amount of their ability to control wind power projects on public or private land.

Why would we want to do this? Primarily, we are told, to combat climate change and reduce our dependency on fossil fuels.

By how much?
My documentation below will show that all 946 MW of identified wind power on state lands would yield about 3.7%[*] of electricity currently consumed in Massachusetts. Meanwhile demand for electricity is expected to rise about 10%[**] in the next decade. These turbines might theoretically reduce our carbon emissions by as much as 1.3%[***]. Even this low number is likely to be high as a result of several assumptions I have made.

Get out your calculator, check my sources and run the numbers yourself.

Bottom line:

Would reducing our carbon emissions by realistically, 1% or less, justify this intrusion into protected land? Does the reduction in dependency on fossil fuel resulting from the building these turbines merit the erosion of the rights of small communities to determine their futures?

Not the way I see it.

Lloyd Crawford
Hawley

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[*] Based on data from ISO New England, assumes 27% capacity factor, 946.5 MW installed capacity
[**] http://www.iso-ne.com/trans/celt/fsct_detail/2009/pac2-25-09long-run_fcst.pdf)
[***] see next page

Calculating Carbon Dioxide emissions avoided by addition of 946MW wind power on state lands

Analysis: Lloyd Crawford 6/9/09

Total C02 emissions MA 2005 = 85,100,000 metric tons
Source : US Energy Information Administration
http://www.eia.doe.gov/oiaf/1605/state/state_emissions.html
open MA excel spread sheet, see row 95 column AE

New England CO2 Marginal Emission Rate 2005 = 1100 lbs CO2 per MWh
Source: New England Marginal Emission Rate Analysis
www.iso-ne.com/genrtion_resrcs/reports/emission/2005_mea_report.pdf
(may only open in internet explorer)
see figure 5.4 .
Note: These figures are used to calculate environmental benefits of REC's
see page 6, paragraph 3

Annual output projected for 946 MW wind power:
946 x .27 Capacity factor x 365 days x 24 hrs = 2237479 MWh/year

Lbs. C02 avoided/year
2237479 MWh x 1100 lbs. = 2,461,227,120 lbs

1 lb = .0004535924 metric tons

C02 avoided/year
2,461,227,120 lbs x .0004535924 = 1,116,393 metric tons

% of total Mass CO2 emissions avoided/year
using 2005 data (most recent available)
1,116,393 metric tons avoided / 85,100,000 metric tons total = .013,

In other words *1.3 %*

Critical Assumptions

All 946 MW identified as potential will actually be developed

Assumes that there are no CO2 emissions resulting from manufacture, transportation and construction of turbines, associated transmission lines, as well as maintenance of these facilities. It should be noted that these wind plants will have virtually no capacity value and thus must be constructed in addition to new conventional power plants that will be needed to accommodate an estimated 1.2% annual growth in power consumption in

Massachusetts (see http://www.iso-ne.com/trans/celt/fsct_detail/2009/pac2-25-09long-run_fcst.pdf)

Assumes CO_2 marginal emission rates will not decline from 2005 levels as trends predict (see www.iso-ne.com/genrtion_resrcs/reports/emission/2005_mea_report.pdf figure 5.4) Note - figure indicates these rates have been dropping over time.
Indeed, Newer 2006 figures
(see http://www.iso-ne.com/genrtion_resrcs/reports/emission/2006_mea_report.pdf)
show marginal emissions rates dropping from 1100 to 993 lbs/MWh.. To be consistent, I will use 2005 data for calculation purposes in this analysis.

Contrary to trends that show virtually all new fossil fuel generation capacity in New England has been from natural gas fired plants
(see http://www.iso-ne.com/genrtion_resrcs/reports/emission/2006_mea_report.pdf), this report assumes oil/gas balance used by power plants in calculating the marginal emissions rate will remain the same.

Assumes pending climate change legislation (including cap and trade) will have no effect on marginal emissions rates in the future.

Assumes balancing electricity demand with supply after the introduction of uncontrollable and volatile wind power will not result in loss of efficiency from conventional power sources.

About the author, Lloyd Crawford

Assessor for the Town of Hawley for 16 years
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Planning Board Member
Wind Study Committee Chairman
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B.S. Natural Resources, University of Michigan
Environmental Educator 1976 to present.
Owner/operator Stump Sprouts Cross Country Ski Center & Guest Lodge

I make my living accommodating visitors who come to Hawley because of the exceptional beauty of our wild and scenic hills. Visit www.StumpSprouts.com to learn more.

This paper has been written and researched by Lloyd Crawford and is not a product of any of the above mentioned organizations.

Your comments, questions are welcome. You may call me at 413-339-4265 or e-mail me at stmpsprt@crocker.com

I will send you this via e-mail, if you request,
So that you may cut & paste links, copy, forward, etc